

What is claimed is:

1. A method for achieving a target trim amount of a feature on a substrate in a chemical oxide removal process comprising:
 - acquiring trim amount data as a function of time for a process recipe;
 - determining a relationship between a value related to said trim amount data and time;
 - using said target trim amount and said relationship to determine a target trim time for achieving said target trim amount;
 - chemically treating said feature on said substrate by exposing said substrate using said process recipe for said target trim time; and
 - substantially removing said target trim amount from said feature.
2. The method of claim 1, wherein said substantially removing said trim amount from said feature comprises thermally treating said substrate by elevating the temperature of said substrate following said chemical treating.
3. The method of claim 1, wherein said substantially removing said trim amount from said feature comprises rinsing said substrate in a water solution following said chemical treating.
4. The method of claim 1, wherein said acquiring trim amount data includes acquiring said trim amount data as said function of time for one flow rate of HF, one flow rate of NH₃, one pressure, and one substrate temperature.
5. The method of claim 4, wherein said acquiring trim amount data further includes acquiring said trim amount data as said function of time for one flow rate of argon.
6. The method of claim 1, wherein said chemically treating said feature includes chemically treating a silicon oxide feature.

7. The method of claim 1, wherein said determining includes fitting said trim amount data as said function of time with a log relationship of the form $x = L \ln(t) + L \ln(C/L)$, wherein x represents trim amount data, t represents time, and L and C are constants for said process recipe.

8. The method of claim 1, wherein said determining includes fitting a first derivative of said trim amount data as said function of time with an exponential relationship of the form $dx/dt = C e^{(-x/L)}$, wherein dx/dt represents the first derivative of trim amount data, x represents trim amount data, t represents time, and L and C are constants for said process recipe.

9. A method for achieving a target trim amount of a feature on a substrate in a chemical oxide removal process comprising:

acquiring trim amount data as a function of time for a process recipe, wherein said process recipe comprises a flow rate of HF, a flow rate of NH_3 , and a pressure;

fitting said trim amount data as said function of time with a log relationship of the form $x = L \ln(t) + L \ln(C/L)$, wherein x represents trim amount data, t represents time, and L and C are constants for said process recipe;

using said target trim amount and said exponential relationship to determine a target trim time for achieving said target trim amount;

chemically treating said feature on said substrate by exposing said substrate using said process recipe for said target trim time; and

substantially removing said target trim amount from said feature.

10. A system for achieving a target trim amount on a substrate in a chemical oxide removal process comprising:

a chemical treatment system for altering exposed surface layers on said substrate by exposing said substrate to a flow rate of a first process gas, and a flow rate of a second process gas, for a target exposure time;

a thermal treatment system for thermally treating said chemically altered surface layers on said substrate; and

a controller coupled to said chemical treatment system and configured to use a relationship between trim amount and exposure time in order to determine said target exposure time for achieving said target trim amount for said flow rate of said first process gas and said flow rate of said second process gas.

11. The system of claim 10, wherein said relationship includes a log relationship of the form $x = L \ln(t) + L \ln(C/L)$, wherein x represents trim amount data, t represents time, and L and C are constants for said process recipe.